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SUBJECT: Coal Bed and Coal Mine Methane (CBM/CMM) in China:
Opportunities and Challenges for Project Development, Methane
Reduction, and Utilization

11. (SBU) SUMMARY: A two-day international symposium and follow-on workshop on coal bed/coal mine methane (CBM/CMM) and carbon trade in China was held December 4-5, 2008, in Beijing. Both the symposium and workshop stressed progress made in existing CBM/CMM projects, the opportunity for future projects with the advent of more advanced CBM/CMM oxidizing technology, and the growth of China's CBM/CMM incentive policies. Significant challenges to the CBM/CMM project process remain, especially in the areas of developing safe technology for draining highly volatile methane gas, navigating the complex legal and regulatory barriers associated with CBD/CMM project development, and streamlining bottlenecks associated with the Clean Development Mechanism application process, a process that hinders CBM/CMM project development and utilization in China. END SUMMARY.

12. (U) The symposium was held under the auspices of China's State Administration of Coal Mine Safety and the United States Environmental Protection Agency (EPA), and was organized by China's Coal Information Institute (CCII). The follow-on workshop that dealt largely with new technology advances and applications for reducing and utilizing coal mine methane, was co-sponsored by the Australian government's Department of Climate Change and China's National Development and Reform Commission (NDRC), and was organized by CCII and Australia's Commonwealth Scientific Industrial Research Organization (CSIRO). In opening remarks, Dr. HUANG Sheng-chu, President of CCII, stressed that CBM/CMM projects represent a very important sector for international cooperation, that CCII cooperates with Australia and the U.S. EPA, and that CCII will continue to promote cooperation in the areas of technology, finance, and legal "best practices" to encourage more CBM/CMM projects in China. It was the general consensus of the symposium participants that improved strategies to enhance technology exchange, cooperation efforts, and the development of additional financing options and channels will be necessary to enable successful development of new CBM/CMM projects.

13. (U) Dr. Pamela Franklin, Team Leader for the U.S. EPA's Coal Bed Methane Outreach Program, said that over 200 CBM/CMM projects were currently underway in China, with more projects expected in the future. Dr. Franklin noted that progress has been made in CBM/CMM project development and partnership creation since the 2007 Beijing Methane-to-Markets Partnership Expo and that future projects must build on the results of the 2007 event. However, while more projects are in the development stage, technological, legal, economic challenges to CBM/CMM drainage and utilization still remain, particularly regarding technology to drain methane gas

safely (methane gas is very explosive at 5%-15% concentrations) and in eliminating bottlenecks in the Clean Development Mechanism (CDM) approval process that discourage CBM/CMM project development.

DRAINAGE AND UTILIZATION TECHNOLOGY

14. (U) Methane released by coal mining operations (CMM) is a potent greenhouse gas (GHG). According to Karl Schultz of Green Gas International, China is the world's largest emitter of coal mine methane -- about 13 million cubic meters per year. Only a fraction of the worldwide CMM emissions is currently being recovered, the rest being released into the atmosphere. Up to 70 percent of CMM emissions originate from coal mine ventilation air methane (VAM), which is virtually all released into the atmosphere. According to the World Bank, VAM emissions amount to about 276 million tons of carbon dioxide equivalent -- the standard measure for GHG emissions -- each year. This represents about 5 percent of all human-generated methane emissions. China alone contributes about 40 percent of these emissions, making it by far the world's largest emitter of VAM. Methane is extremely explosive at low concentrations, and technology used in CBM/CMM projects in China is currently not adequate to find deeper seated sources of CMM in order to avoid highly-volatile (5% - 15%) concentrations (deeper seated CMM contain larger, less volatile percentages of methane). Conference participants generally agreed that a key challenge to current and next generation CBM/CMM projects will be developing and implementing more sophisticated technology able to optimize CMM operations and enhance efficiency in order to drain higher purity, less volatile concentrations of CMM.

15. (U) According to Professor YANG Ke-jian of the Beijing Guoneng
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Energy Technology Co., Ltd., China has an estimated 31.4 trillion cubic meters of CBM located at depths between 200-3000 meters, equivalent to China's conventional land-borne natural gas reserves. In China more than 10 billion cubic meters of CMM is exhausted into the atmosphere per year, largely for coal mining safety. Advocating the introduction of new oxidizing technology to current and new CBM/CMM projects, Professor Yang said that his company's experimental cryogenic methane purification and liquefaction process has resulted in a high rate of CMM recovery, can be done safely because of a low temperature process, and can be done cheaply because of the simultaneous liquefaction and purification techniques. The resultant markets include fuel for alternative vehicle for industrial power generation, making LNG derived from CMM economically beneficial.

16. (U) Companies attending the symposium and workshop presented data from ongoing feasibility studies showing that new CBM/CMM managers, expecting to sell gas developed from CMM projects, will more often than before have to take market and economic considerations into account. Ray Pilcher, President of Raven Ridge Resources, Inc., suggested that local residential and commercial markets for gas derived from CMM projects are often limited and the best LNG markets are a good distance away from the projects; mining areas also are sometimes located near population and prime agriculture areas, a potential for land use conflict. Mr. LIU Bai-qi of Biothermica Technologies, Inc. (Montreal) said that highly-explosive, low concentrations of CMM continue to be a barrier to CMM recovery and use, and that new oxidation technologies are now able to safely and reliably destroy VAM while generating a revenue stream from the sale of carbon credits.

CBM/CMM AND THE CLEAN DEVELOPMENT MECHANISM

17. (U) CMM projects are also seen as potentially valuable for investors in their ability to generate CDM credits. But some existing projects have met with limited success. As a large emitter of methane from coal mines, China has a large number of coal mines and project developers submitting proposals for approval as Clean Development Mechanism (CDM) projects. Karl Schultz of Green Gas

International noted that CMM projects seeking to qualify for certified emissions reductions (one CER is equal to one ton of carbon dioxide reduced) in China have on average a poor record for approvals and delivery, and that many projects have not lived up to expectations. Michael Cote of Ruby Canyon Engineering said that, as of November 2008, only 8 of 59 CMM projects in China have been registered by the UNFCCC CDM executive board, and that the remaining projects face the prospect of never being registered because of changing Chinese regulations surrounding utilization of CMM and because of lengthy and complex CDM validation periods. However, Shultz said that risks of CDM approval delay or rejection can be mitigated if appropriate care is taken in project preparation, technical execution, and appropriate alignment of interests between the mine and CMM project experts.

CHINA'S EVOLVING CBM/CMM INCENTIVE POLICIES

18. Mr. LIU Wen-ge, Director of the International Division of CCII provided examples of 2006 Chinese central government policies that are aimed at encouraging CBM/CMM project development. These include encouraging CMM utilization (i.e., expanding household and industrial use), increasing Chinese government financial support for projects (proposed 3 billion RMB investment over the next 3 years), preferential tax treatment (exempting prospecting and mining right fees), and improved project management practices (encouraging big domestic coal, oil or gas companies to partner with international corporations). Mr. Liu noted that China's incentive policies are expected to contribute to coal mine safety, increase the utilization of clean energy, and help protect the environment.

19. (SBU) COMMENT: Chinese government officials are keen to support continued CBM/CMM efforts and next generation projects, while acknowledging that current legal and regulatory hurdles present difficult challenges to new CBM/CMM projects. Growing opportunities for more CBM/CMM drainage and utilization projects are stimulating new feasibility studies, encouraging development of advanced

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technologies, and stimulating new experimental processes. Increasing technology exchanges, capacity building efforts, new feasibility studies, and exploring new sources of and channels for CMM project financing will be necessary if momentum for new CBM/CMM projects is to continue. What remains to be seen will be how Chinese government officials address the lack of clear lines of decision making among mine operators, managers, and investors, which is often seen by private sector technology developers as the most significant challenge to the success of new and next generation CBM/CMM projects. END COMMENT

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